

**ABSTRACT**

[00067] A semiconductor device includes a low dielectric constant insulating film exhibiting an Si-H Fourier Transform Infrared (FTIR) doublet defined by a first and a second peak, wherein the first peak is located at a higher wave number than the second peak, and wherein the ratio of the first peak to the second peak is greater than unity. A method of producing such a semiconductor device includes depositing a dielectric layer over a substrate and treating the dielectric layer in a hydrogen containing plasma such that the dielectric layer exhibits an Si-H Fourier Transform Infrared (FTIR) doublet defined by a first and a second peak, wherein the first peak is located at a higher wave number than the second peak, and wherein the ratio of the first peak to the second peak is greater than unity.